

UEFI BIOS Setup	1
1 Main Menu.....	3
2 Advanced Menu.....	4
3 Chipset Menu.....	14
4 Boot Menu.....	21
5 Security Menu.....	24
6 Performance Menu	25
7 Exit Menu	29

UEFI BIOS Setup

Introduction

The purpose of this manual is to describe the settings in the AMI UEFI BIOS Setup program on this motherboard. The Setup program allows users to modify the basic system configuration and save these settings to NVRAM. UEFI BIOS determines what a computer can do without accessing programs from a disk. This system controls most of the input and output devices such as keyboard, mouse, serial ports and disk drives. BIOS activates at the first stage of the booting process, loading and executing the operating system. Some additional features, such as virus and password protection or chipset fine-tuning options are also included in UEFI BIOS. The rest of this manual will to guide you through the options and settings in UEFI BIOS Setup.

Plug and Play Support

This AMI UEFI BIOS supports the Plug and Play Version 1.0A specification.

EPA Green PC Support

This AMI UEFI BIOS supports Version 1.03 of the EPA Green PC specification.

ACPI Support

AMI ACPI UEFI BIOS support Version 1.0/2.0 of Advanced Configuration and Power interface specification (ACPI). It provides ASL code for power management and device configuration capabilities as defined in the ACPI specification, developed by Microsoft, Intel and Toshiba.

PCI Bus Support

This AMI UEFI BIOS also supports Version 2.3 of the Intel PCI (Peripheral Component Interconnect) local bus specification.

DRAM Support

DDR3 SDRAM (Double Data Rate III Synchronous DRAM) is supported.

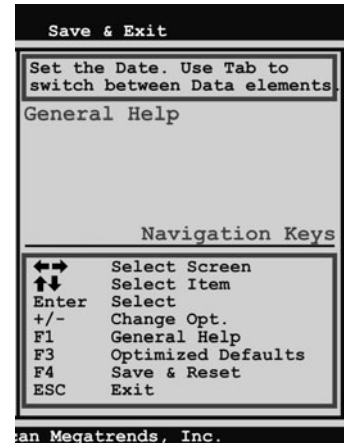
Supported CPUs

This AMI UEFI BIOS supports the Intel CPU.

Using Setup

When starting up the computer, press during the **Power-On Self-Test (POST)** to enter the UEFI BIOS setup utility.

In the UEFI BIOS setup utility, you will see **General Help** description at the top right corner, and this is providing a brief description of the selected item. **Navigation Keys** for that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings.

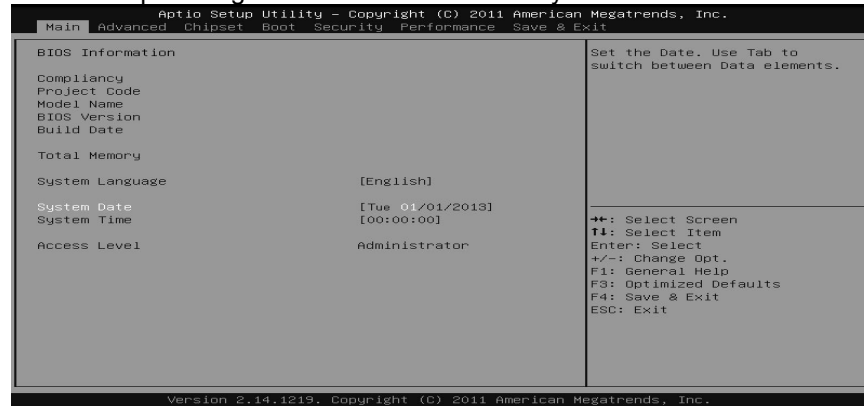


Notice

- The default UEFI BIOS settings apply for most conditions to ensure optimum performance of the motherboard. If the system becomes unstable after changing any settings, please load the default settings to ensure system's compatibility and stability. Use Load Setup Default under the Exit Menu.
- For better system performance, the UEFI BIOS firmware is being continuously updated. The UEFI BIOS information described in this manual is for your reference only. The actual UEFI BIOS information and settings on board may be slightly different from this manual.
- The content of this manual is subject to be changed without notice. We will not be responsible for any mistakes found in this user's manual and any system damage that may be caused by wrong-settings.

1 Main Menu

Once you enter AMI UEFI BIOS Setup Utility, the Main Menu will appear on the screen providing an overview of the basic system information.



BIOS Information

It shows system information including UEFI BIOS version, model name, marketing name, built date, etc.

Total Memory

Shows system memory size, VGA shard memory will be excluded.

System Date

Set the system date. Note that the 'Day' automatically changes when you set the date.

System Time

Set the system internal clock.

Access Level

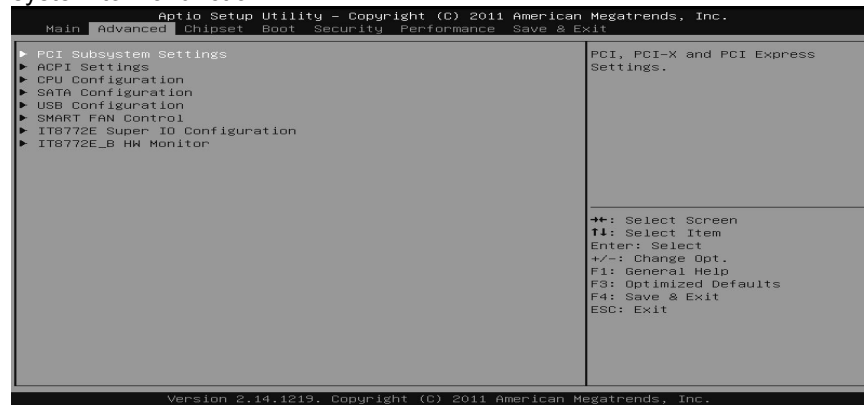
It shows the access level of current user.

2 Advanced Menu

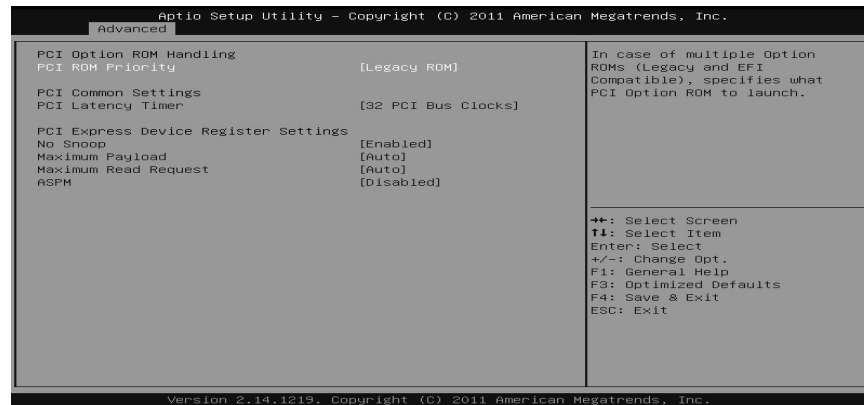
The Advanced Menu allows you to configure the settings of CPU, Super I/O, Power Management, and other system devices.

Notice

Beware of that setting inappropriate values in items of this menu may cause system to malfunction.



PCI Subsystem Settings



PCI ROM Priority

In case of multiple option ROMs (Legacy and EFI Compatible), this item specifies what PCI Option ROM to launch

Options: Legacy ROM (Default) / EFI Compatible ROM

PCI Latency Timer

This item sets the value to be programmed into PCI Latency Timer Register.

Options: 32 PCI Bus Clocks (Default) / 64 PCI Bus Clocks / 96 PCI Bus Clocks / 128 PCI Bus Clocks / 160 PCI Bus Clocks / 192 PCI Bus Clocks / 224 PCI Bus Clocks / 248 PCI Bus Clocks

No Snoop

This item enables or disables PCI Express Device No Snoop option.

Options: Enabled (Default) / Disabled

Maximum Payload

This item sets Maximum Payload of PCI Express Device or allows System BIOS to select the value.

Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

Maximum Read Request

This item sets Maximum Read Request Size of PCI Express Device or allows System BIOS to select the value.

Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

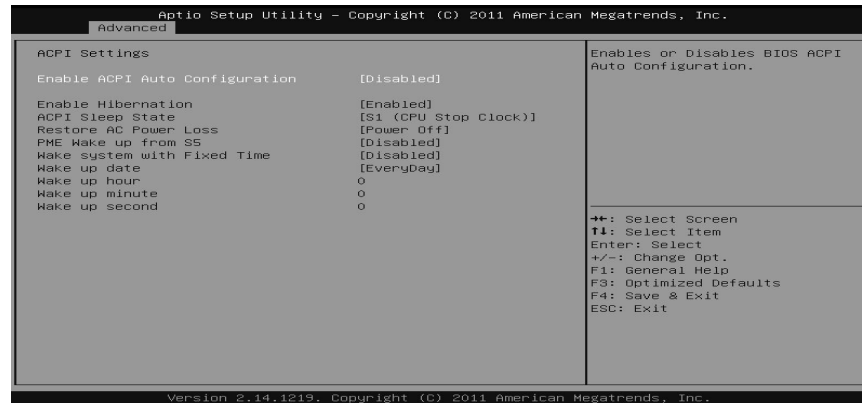
ASPM

This item sets the ASPM Level: Force LO – Force all links to LO State;

Auto – BIOS auto configures; Disabled – Disables ASPM.

Options: Disabled (Default) / Auto / Force LO

ACPI Settings



Enable ACPI Auto Configuration

This item enables or disables BIOS ACPI auto configuration function.

Options: Disabled (Default) / Enabled

Enable Hibernation

This item enables or disables system ability to hibernate (OS/S4 sleep state).

This option may be not effective with some OS.

Options: Enabled (Default) / Disabled

ACPI Sleep State

This item selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

Options: S1 (CPU Stop Clock) (Default) / Suspend Disabled

Restore AC Power Loss

This setting specifies how your system should behave after a power fail or interrupts occurs. Power Off: Leaving the system in power-off status after power recovers. Power ON: Powering on the system immediately when power returns. Last State: 1. Leaving the system in power-off if the system shuts down at DC off status; 2. Powering on the system immediately if the system shuts down at DC on status.

Options: Power Off (Default) / Power On / Last State

PME Wake up from S5

The item enables the system to wake from S5 using PME event.

Options: Disabled (Default) / Enabled

H61MGV3 / H61MLV3 UEFI BIOS Manual

Wake system with Fixed Time

This item enables or disables the system to wake on by alarm event. When this item is enabled, the system will wake on the hr::min::sec specified.
Options: Disabled (Default) / Enabled

Wake up date

You can choose which date the system will boot up.

Wake up hour / Wake up minute / Wake up second

You can choose the system boot up time, input hour, minute and second to specify.

CPU Configuration



Hyper-threading

Hyper Threading Technology can improve performance by splitting instructions into multiple streams. This item is enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and disabled for other OS (OS not optimized for Threading Technology). When this item is disabled, only one thread per enabled core is enabled.
Options: Enabled (Default) / Disabled

Active Processor Cores

This item sets number of cores to enable in each processor package.
Options: All (Default) / 1 / 2 / 3

Limit CPUID Maximum

When the computer is booted up, the operating system executes the CUID instruction to identify the processor and its capabilities. Before it can do so, it must first query the processor to find out the highest input value CUID recognizes. This determines the kind of basic information CUID can provide the operating system.

Options: Disabled (Default) / Enabled

Execute-Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.).

Options: Enabled (Default) / Disabled

Intel Virtualization Technology

Virtualization Technology can virtually separate your system resource into several parts, thus enhance the performance when running virtual machines or multi interface systems.

Options: Disabled (Default) / Enabled

Hardware Prefetcher

The processor has a hardware prefetcher that automatically analyzes its requirements and prefetches data and instructions from the memory into the Level 2 cache that are likely to be required in the near future. This reduces the latency associated with memory reads.

Options: Enabled (Default) / Disabled

Adjacent Cache Line Prefetch

The processor has a hardware adjacent cache line prefetch mechanism that automatically fetches an extra 64-byte cache line whenever the processor requests for a 64-byte cache line. This reduces cache latency by making the next cache line immediately available if the processor requires it as well.

Options: Enabled (Default) / Disabled

CPU C3 Report

This item allows you to enable or disabled CPU C3 (ACPI C2) report to OS.

Options: Enabled (Default) / Disabled

CPU C6 Report

This item allows you to enable or disabled CPU C6 (ACPI C3) report to OS.

Options: Enabled (Default) / Disabled

SATA Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
SATA Controller(s)	[Enabled]	Enable or disable SATA Device.
SATA Mode Selection	[IDE]	
SMART Self Test	[Disabled]	
SATA 1 : None		++: Select Screen F1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit
SATA 2 : None		
SATA 3 : None		
SATA 4 : None		
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.		

SATA Controller(s)

This item enables/disables Serial ATA Device.

Options: Enabled (Default) / Disabled

SATA Mode Selection

This item determines how SATA controller(s) operate.

Options: IDE (Default) / AHCI

SMART Self Test

This item allows you run SMART self test on all HDDs during POST.

Options: Disabled (Default) / Enabled

USB Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
USB Configuration		Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
USB Devices: 2 Hubs		
Legacy USB Support	[Enabled]	
EHCI Hand-off		[Disabled]
Port 60/64 Emulation		[Enabled]
USB hardware delays and time-outs:		
USB transfer time-out		[20 sec]
Device reset time-out		[20 sec]
Device power-up delay		[Auto]
++: Select Screen F1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit		
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Legacy USB Support

This item determines if the BIOS should provide legacy support for USB devices like the keyboard, mouse, and USB drive. This is a useful feature when using such USB devices with operating systems that do not natively support USB (e.g. Microsoft DOS or Windows NT).

Options: Enabled (Default) / Disabled / Auto

EHCI Hand-Off

This is a workaround for OSeS without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

Options: Disabled (Default) / Enabled

Port 60/64 Emulation

This item enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSeS.

Options: Enabled (Default) / Disabled

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Options: 20 sec (Default) / 1 sec / 5 sec / 10 sec

Device reset time-out

The item sets USB mass storage device Start Unit command time-out.

Options: 20 sec (Default) / 10 sec / 30 sec / 40 sec

Device power-up delay

“Auto” uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

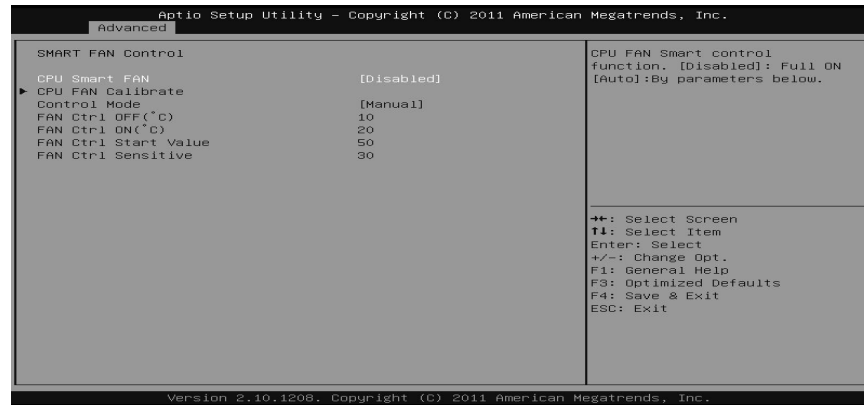
Options: Auto (Default) / Manual

Device power-up delay in seconds

Delay range is 1 ~ 40 seconds, in one second increments.

Options: 5 (Default)

SMART FAN Control



CPU Smart FAN

This item allows you to control the CPU Smart Fan function.

Options: Disabled (Default) / Auto

CPU FAN Calibrate

Press [ENTER] to calibrate CPU FAN.

Control Mode

This item provides several operation modes of the fan.

Options: Quiet / Aggressive / Manual

Fan Ctrl OFF(°C)

When CPU temperature is lower than this value, the CPU fan will keep lowest RPM.

Options: 10 (°C) (default)

Fan Ctrl On(°C)

When CPU temperature is higher than this value, the CPU fan controller will turn on.

Options: 20 (°C) (Default)

Fan Ctrl Start Value

This item sets CPU FAN Start Speed Value.

Options: 50 (Default)

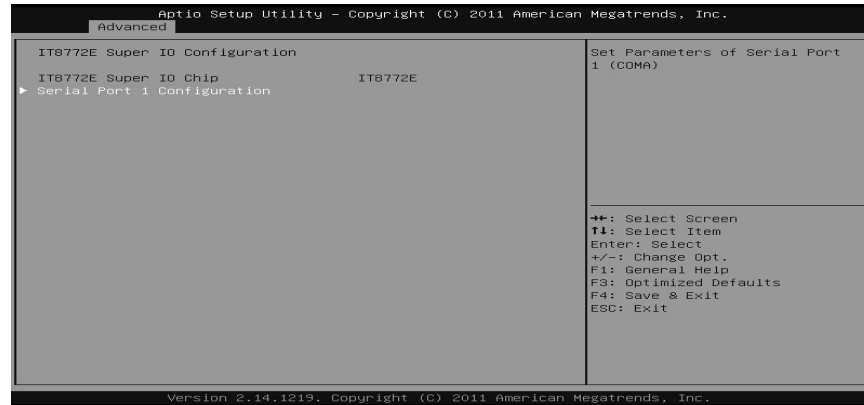
Fan Ctrl Sensitive

The bigger the numeral is, the higher the FAN speed is.

Options: 30 (Default)

H61MGV3 / H61MLV3 UEFI BIOS Manual

Super IO Configuration



Serial Port 1 Configuration



Serial Port

This item enables or disables Serial Port (COM).

Options: Enabled (Default) / Disabled

Change Settings

This item allows you to select an optimal setting for Super IO device.

Options: Auto (Default) / IO=3F8h; IRQ=4 / IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12 / IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12 / IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12 / IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

H61MGV3 / H61MLV3 UEFI BIOS Manual

H/W Monitor



Shutdown Temperature

This item allows you to set up the CPU shutdown Temperature.

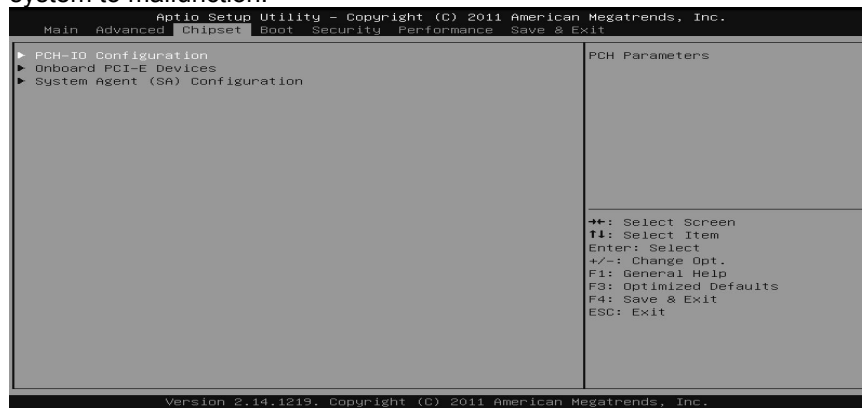
Options: Disabled (Default) / 70°C/158°F / 75°C/167°F / 80°C/176°F / 85°C/185°F / 90°C/194°F

3 Chipset Menu

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components.

Notice

Beware of that setting inappropriate values in items of this menu may cause system to malfunction.



PCH-IO Configuration



H61MGV3 / H61MLV3 UEFI BIOS Manual

PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
PEX1_1 Slot ASPM PCIe Speed	[Disabled] [Auto]
PCI Express Active State Power Management settings.	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.	

ASPM

This item sets PCI Express Active State Power Management settings.

Options: Disabled (Default) / L0s / L1 / L0sL1 / Auto

PCIe Speed

This item selects PCI Express port speed.

Options: Auto (Default) / Gen1 / Gen2

USB Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
USB Configuration EHCI1 EHCI2	[Enabled] [Enabled]
Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.	

EHCI1/2

This item controls the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.

Options: Enabled (Default) / Disabled

H61MGV3 / H61MLV3 UEFI BIOS Manual

PCH Azalia Configuration



Azalia

This item controls detection of the Azalia device.

Disabled = Azalia will be unconditionally disabled.

Enabled = Azalia will be unconditionally Enabled.

Auto = Azalia will be enabled if present, disabled otherwise.

Options: Auto (Default) / Disabled / Enabled

EuP Control

When EuP is enabled, the system will meet EuP requirement.

Options: Disabled (Default) / Enabled in S5 / Enabled in S4-S5

SLP_S4 Assertion Width

This item selects a minimum assertion width of the SLP_S4# signal.

Options: 4-5 Seconds (Default) / Disabled / 1-2 Seconds / 2-3 Seconds / 3-4 Seconds

H61MGV3 / H61MLV3 UEFI BIOS Manual

On Board PCIe Device

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
LAN0 MAC ID = 00-E0-4C-68-00-18	
Onboard PCIe Giga LAN	[Enabled]
Onboard LAN Option ROM	[Disabled]
Control the PCI Express Root Port.	
++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.	

Onboard PCIE Giga LAN

This item controls the PCI Express Root Port.

Options: Enabled (Default) / Disabled

* Note: (H61MLV3 is Fast Ethernet LAN)

Onboard LAN Option ROM

This item enables or disables onboard LAN option ROM.

Options: Disabled (Default) / Enabled

System Agent (SA) Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
► Graphics Configuration	Config Graphics Settings.
► NB PCIe Configuration	
► Memory Configuration	
++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.	

H61MGV3 / H61MLV3 UEFI BIOS Manual

Graphics Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
Graphics Configuration		
Primary Display	[Auto]	Select which of IGFX/PEG Graphics device should be Primary Display or select SG for Switchable Gfx.
Internal Graphics	[Auto]	
GTT Size	[2MB]	
Aperture Size	[256MB]	
DVMT Pre-Allocated	[64M]	
DVMT Total Gfx Mem	[MAX]	
GT - Power Management Control		
RC6(Render Standby)	[Enabled]	
RC6+(Deep RC6)	[Enabled]	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F4: Save & Exit ESC: Exit		
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.		

Primary Display

This item selects which of IGFX/PEG/PCI Graphics device should be Primary Display or select SG for Switchable Gfx.

Options: Auto (Default) / IGFX / PEG

Internal Graphics

This item keeps IGD enabled based on the setup options.

Options: Auto (Default) / Disabled / Enabled

GTT Size

This item selects GTT Size.

Options: 2MB (Default) / 1MB

Aperture Size

This item selects Aperture Size.

Options: 256MB (Default) / 128MB / 512MB

DVMT Pre-Allocated

This item selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Options: 64M (Default) / 32M / 96M / 128M / 160M / 192M / 224M / 256M / 288M / 320M / 352M / 384M / 416M / 448M / 480M / 512M / 1024M

DVMT Total Gfx Mem

This item selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

Options: MAX (Default) / 128MB / 256MB

RC6 (Render Standby)

This item enables render standby support

Options: Enabled (Default) / Disabled

RC6+ (Deep RC6)

This item enables Deep RC6 (RC6+) support

Options: Enabled (Default) / Disabled

NB PCIe Configuration



PEX16_1 - Gen X

This item configures PEG0 B0:D1:F0 Gen1-Gen3.

Options: Auto (Default) / Gen1 / Gen2 / Gen3

PEG0 ASPM

This item controls ASPM support for the PEG: Device 1 Function 0. This has no effect if PEG is not the currently active device.

Options: Disabled (Default) / Auto / ASPM L0s / ASPM L1 / ASPM L0sL1

Detect Non-Compliance Device

This item detects Non-Compliance PCI Express Device in PEG.

Options: Disabled (Default) / Enabled

De-emphasis Control

This item configures the De-emphasis control on PEG.

Options: -3.5 dB (Default) / -6 dB

PEG Sampler Calibrate

This item enables or disables PEG Sampler Calibrate. Auto means Disabled for SNB MB/DT, Enabled for IVB A0 B0.

Options: Auto (Default) / Enabled / Disabled

Swing Control

This item performs PEG Swing Control, on IVB C0 and Later.

Options: Full (Default) / Reduced / Half

Gen3 Equalization

This item performs PEG Gen3 Equalization steps.

Options: Enabled (Default) / Disabled

H61MGV3 / H61MLV3 UEFI BIOS Manual

Memory Configuration



Max TOLUD

This item sets maximum value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.

Options: Dynamic (Default) / 1 GB / 1.25 GB / 1.5 GB / 1.75 GB / 2 GB / 2.25 GB / 2.5 GB / 2.75 GB / 3 GB / 3.25 GB

MRC Fast Boot

This item enables or disables MRC Fast Boot.

Options: Enabled (Default) / Disabled

Memory Remap

This item enables or disables memory remap above 4G.

Options: Enabled (Default) / Disabled

4 Boot Menu

This menu allows you to setup the system boot options.



Setup Prompt Timeout

This item sets number of seconds to wait for setup activation key.
Options: 2 (Default)

Bootup NumLock State

This item selects the keyboard NumLock state.
Options: On (Default) / Off

Full Screen Logo Display

This item allows you to enable/disable Full Screen Logo Show function.
Options: Enabled (Default) / Disabled

GateA20 Active

Upon Request – GA20 can be disabled using BIOS services. Always – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB
Options: Upon Request (Default) / Always

Option ROM Messages

This item sets the display mode for Option ROM.
Options: Force BIOS (Default) / Keep Current

INT 19 Capture

BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.

Options: Postponed (Default) / Immediate

BIOS Flash protection

While enabled, it can't flash write and flash erase by SMI.

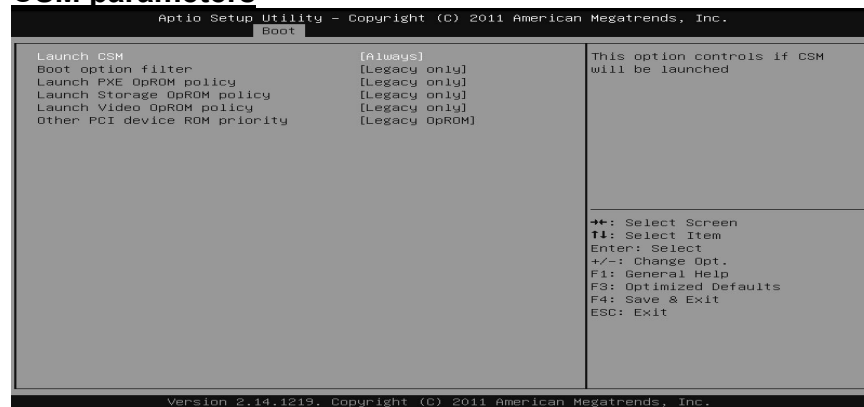
Options: Enabled (Default) / Disabled

Boot Success Beep

When this item is set to Enabled, BIOS will let user know boot success with beep.

Options: Enabled (Default) / Disabled

CSM parameters



Launch CSM

This option controls if CSM will be launched

Options: Always (Default) / Never

Boot option filter

This option controls what devices system can boot to.

Options: Legacy only (Default) / UEFI and Legacy / UEFI only

Launch PXE OpROM policy

This option controls the execution of UEFI and Legacy PXE OpROM

Options: Legacy only (Default) / UEFI only / Do not launch

Launch Storage OpROM policy

This option controls the execution of UEFI and Legacy Storage OpROM

Options: Legacy only (Default) / UEFI only / Do not launch

Launch Video OpROM policy

This option controls the execution of UEFI and Legacy Video OpROM

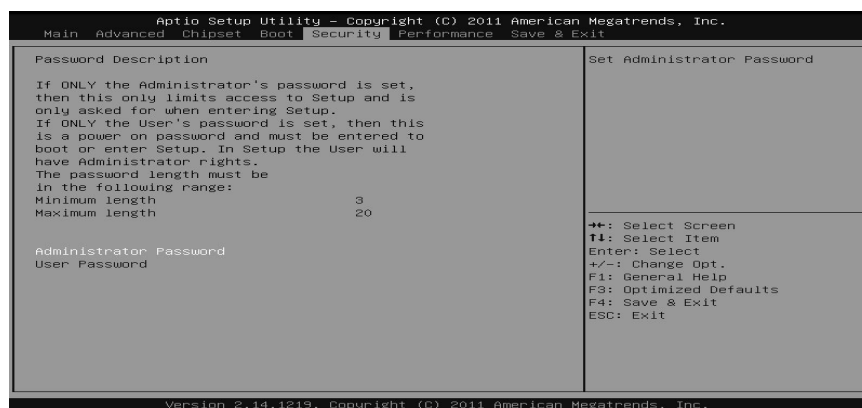
Options: Legacy only (Default) / UEFI only / Do not launch

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or video defines which OpROM to launch.

Options: Legacy OpROM (Default) / UEFI OpROM

5 Security Menu



Administrator Password

This item sets Administrator Password.

User Password

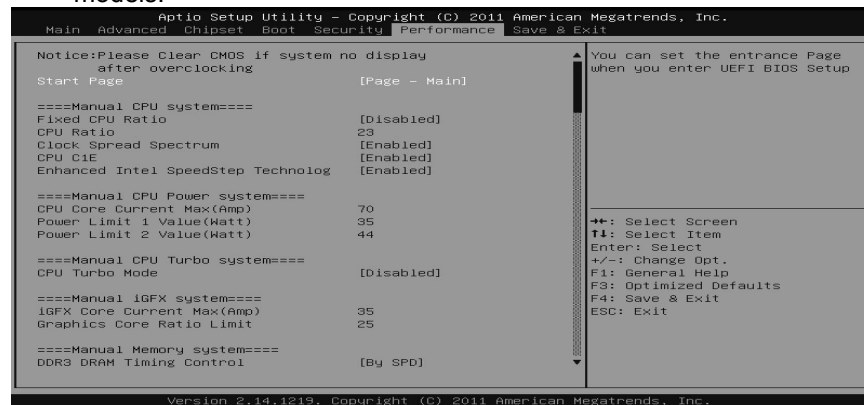
This item sets User Password.

6 Performance Menu

This submenu allows you to change voltage and clock of various devices.
(However, we suggest you use the default setting. Changing the voltage and clock improperly may damage the device.)

Notice

- Beware of that setting inappropriate values in items of this menu may cause system to malfunction.
- The options and default settings might be different by RAM or CPU models.



Start Page

You can set the entrance page when you enter UEFI BIOS Setup.

Options: Page – Main (Default) / Page – Advanced / Page – Chipset / Page – Boot / Page – Security / Page –Performance / Page – Save & Exit

Fixed CPU Ratio

This item enables/disables Fixed CPU Ratio all the time.

Options: Disabled (Default) / Enabled

CPU Ratio

This item allows you to set the CPU ratio. This item is adjustable only when Fixed CPU Ratio is set to Enabled.

Options: 23 (Default)

Clock Spread Spectrum

This item enables or disables CPU Clock Spread Spectrum
Options: Enabled (Default) / Disabled

CPU C1E

C1E is "Enhanced Halt State" function, this function helps to save power and decrease heat by lowering CPU frequency while the processor is not working.
Options: Enabled (Default) / Disabled

Enhanced Intel SpeedStep Technology

This item enables/disables Enhanced Intel SpeedStep Technology.
Options: Enabled (Default) / Disabled

CPU Core Current Max (Amp)

This item sets the Max instantaneous current allowed at any given time.
Options: 90 (Default)

Power Limit 1 Value (Watt)

This item sets the power limit value which CPU must not exceed over a specific time.
Options: 35 (Default)

Power Limit 2 Value (Watt)

This item sets the power limit value.
Options: 44 (Default)

CPU Turbo Mode

This item enables/disables Turbo Mode.
Options: Disabled (Default)

iGFX Core Current Max (Amp)

This item sets iGFX core current MAX
Options: 35 (Default)

Graphics Core Ratio Limit

This item sets Graphics Core Ratio Limit.
Options: 25 (Default)

DDR3 DRAM Timing Control

This item allows you to choose to manually or automatically regulate the DRAM Timing.

Options: By SPD (Default) / Manual / XMP Profile 1 / XMP Profile 2

DDR3 DRAM Multiplier

This item allows you to set DDR3 DRAM Multiplier.

DDR3 DRAM Command Rate

This item allows you to set DDR3 DRAM Multiplier.

Options: Auto (Default) / 1T / 2T

CAS# Latency (tCL)

This item allows you to select CAS Latency of DDR3.

Options: 7 (Default) / 3 ~ 15

Row Precharge Time (tRP)

This item allows you to select Row Precharge Time of DDR3.

Options: 7 (Default) / 3 ~ 15

RAS# to CAS# Delay (tRCD)

This item allows you to select Row Address to Column Address Delay of DDR3.

Options: 7 (Default) / 3 ~ 15

RAS# Active Time (tRAS)

This item allows you to select Row Active Time of DDR3.

Options: 20 (Default) / 9 ~ 63

Write Recovery Time (tWR)

This item allows you to select Internal Write to Read Command Delay of DDR3.

Options: 8 (Default) / 3 ~ 31

Row Refresh Cycle Time (tRFC)

This item allows you to select Minimum Refresh Recovery Time of DDR3.

Options: 59 (Default) / 15 ~ 255

Write to Read Delay (tWTR)

This item allows you to select Internal Write to Read Command Delay of DDR3.

Options: 4 (Default) / 3 ~ 31

Active to Active Delay (tRRD)

This item allows you to select Row Active to Row Active Delay of DDR3.

Options: 4 (Default) / 4 ~ 15

Read CAS# Precharge (tRTP)

This item allows you to select Read to Precharge Delay of DDR3.

Options: 4 (Default) / 4 ~ 15

Four Active Window Delay (tFAW)

This item allows you to select Four Active Window Delay of DDR3.

Options: 20 (Default) / 4 ~ 63

CAS Write Latency (CWL)

This item allows you to select CAS Write Latency of DDR3.

Options: 6 (Default) / 5 ~ 15

DRAM Voltage

This item sets DRAM Voltage.

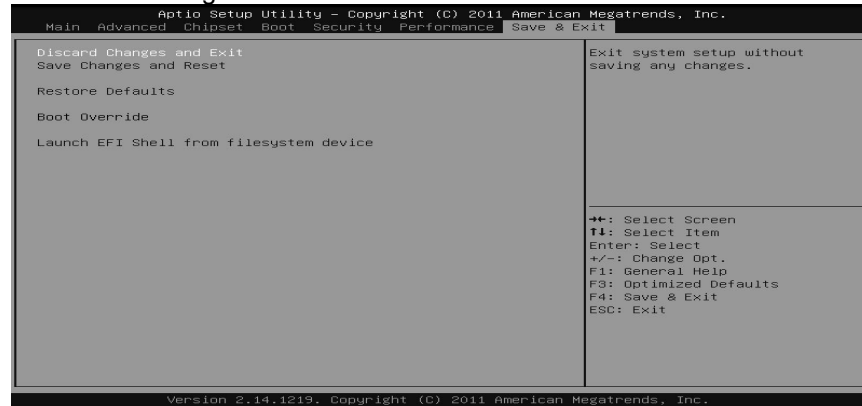
DDR3 A1/B1 Information

These items display SPD information of DDR3 memory.



7 Exit Menu

This menu allows you to load the optimal default settings, and save or discard the changes to the BIOS items.



Discard Changes and Exit

Abandon all changes made during the current session and exit setup.

Save Changes and Reset

Reset the system after saving the changes.

Restore Defaults

This selection allows you to reload the BIOS when problem occurs during system booting sequence. These configurations are factory settings optimized for this system.

Launch EFI Shell from file system device

Attempts to launch EFI Shell application (Shellx64.efi) from one of the available file system devices.